FUJITSU

POWER RELAY

1 POLE - 25A Flat High Current Power Relay

FTR-K3F Series

■ FEATURES

- Low profile (height 18.2mm)
- High contact rating (25A) with #250 tab terminals or PCB terminals
- Low coil power (780mW)
- Cadmium free contacts, lead free
- Safety standards
  UL, CSA, VDE, CQC approved
- Flux proof, RTII
- RoHS compliant

Please see page 6 for more information

■ PARTNUMBER INFORMATION

[Example] FTR-K3F (a) J (b) B (c) 012 (d) W (e)

(a)	Relay type	FTR-K3F: FTR-K3F Series	
(b)	Contact configuration	A J	: 1 form A (PCB terminal) : 1 form A (PCB + Tab terminals)
(c)	Coil type	B	: Standard type (780mW)
(d)	Coil rated voltage	012	: 5....48VDC Coil rating table at page 3
(e)	Contact material	W	: Silver alloy

Actual marking does not carry the type name : "FTR"
E.g.: Ordering code: FTR-K3FJB012W Actual marking: K3FJB012W

■ SPECIFICATION

Item			FTR-K3F
Contact Data	Configuration		1 form A
	Construction		Single
	Material		Silver alloy
	Resistance (initial)		Max. 100mOhm at 1A, 6VDC
	Contact rating	Resistive	25A, 250VAC
		Motor load	Inrush 80A (0.38s) cosφ=0.7 / steady 20A cosφ=0.9 250VAC
		Inverter load	Inrush 200A peak / steady 20A 100VAC
	Max. carrying current *1		25A
	Max. switching current		25A
	Max. switching voltage		250VAC
	Max. switching power		6,250VA
	Min. switching load *2		100mA , 5VDC (reference value)
Life	Mechanical		Min. 2×10^6 operations
	Electrical	Resistive	Min. 100×10^3 operations
		Motor	Min. 200×10^3 operations
		Inverter	Min. 30×10^3 operations
Coil Data	Rated power (20 °C)		780mW
	Operate power (20 °C)		383mW
	Operating temperature range		-40 °C to +60 °C (no frost)
Timing Data	Operate (at nominal voltage)		Max. 20ms (without bounce)
	Release (at nominal voltage)		Max. 10ms (no diode)
Insulation	Resistance (initial)		Min. 1,000MOhm at 500VDC
	Dielectric strength	Open contacts	1,000VAC (50/60Hz) 1min
		Contacts to coil	5,000VAC (50/60Hz) 1min
	Surge strength	Coil to contacts	8,500V at 1.2 x 50μs standard wave
	Clearance		6.4mm
	Creepage		9.5mm
	EN61710-1, VDE0435	Voltage	250V
		Pollution degree	3
		Material group	III a
Other	Vibration resistance	Misoperation	10 to 55 to 10Hz single amplitude 0.75mm
		Endurance	10 to 55 to 10Hz single amplitude 0.75mm
	Shock	Misoperation	Min. $200 m/s^2$ (11±1ms)
		Endurance	Min. $1,000 m/s^2$ (6±1ms)
	Weight		Approximately 25g
	Sealing		Flux proof, RTII

*1: Care shall be taken on the heat generated on PC board when maximum carrying current exceeds 10A. Please perform the confirmation test with actual conditions.

*2: Minimum switching loads mentioned above are reference values. Please perform the confirmation test with actual load before production since reference values may vary according to switching frequencies, environmental conditions and expected reliability levels.

■ COIL RATING

Coil Code	Rated Coil Voltage (VDC)	Coil Resistance +/- 10% (Ohm)	Must Operate Voltage (VDC) *	Must Release Voltage (VDC) *	Max. Coil Voltage (VDC)	Rated Power (mW)
005	5	32	3.5	0.5	9	780
006	6	46	4.2	0.6	10.8	
009	9	105	6.2	0.9	16.2	
012	12	185	8.4	1.2	21.6	
018	18	415	12.6	1.8	32.4	
024	24	740	16.8	2.4	43.2	
048	48	2,955	33.6	4.8	86.4	

Note: All values in the table are valid for 20°C and zero contact current.
* Specified operate voltage are valid for pulse wave voltage.
❗Please use at rated coil voltage. Please refer to characteristic data and set up adequate voltage in case of use at over voltage.

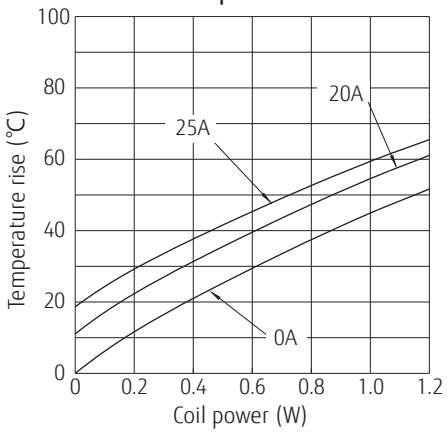
■ SAFETY STANDARDS

Type	Compliance	Contact rating
UL	UL 508 E63614	Flammability: UL 94-V0 (plastics) 25A, 277 VAC (resistive) 1 HP, 125VAC 2 HP, 277VAC, 100,000 cycles
CSA	C22.2 No. 14 LR 40304	
VDE	IEC/EN61810-1	25A, 250 VAC (cosφ=1) 60°C
CQC	GB15092.1 17002165723	25A, 250VAC

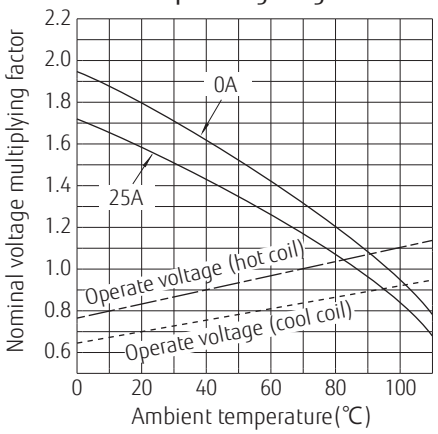
■ CHARACTERISTIC DATA

(Characteristic data is not guaranteed value but measured values of samples from production line.)

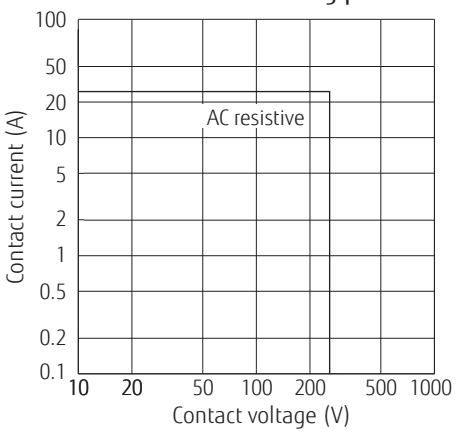
Coil temparature rise



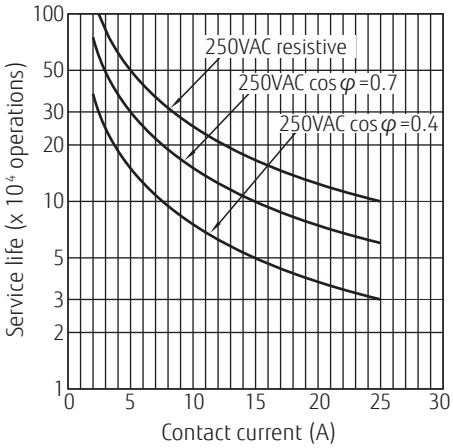
Operating range



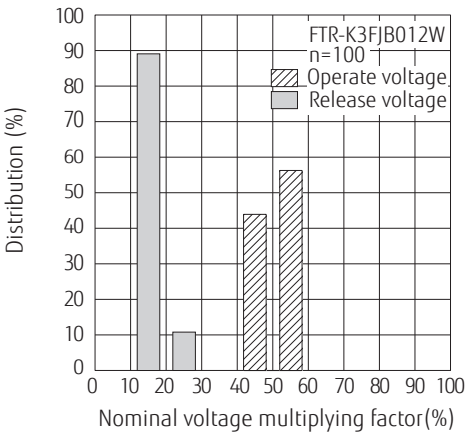
Maximum switching power



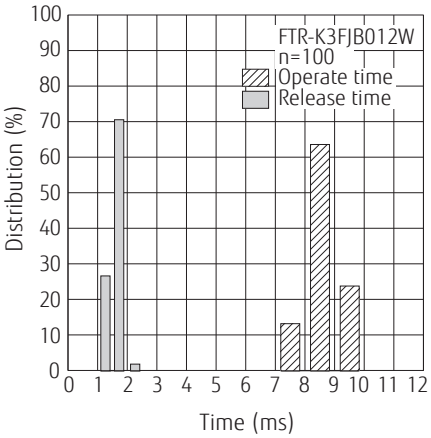
Life curve



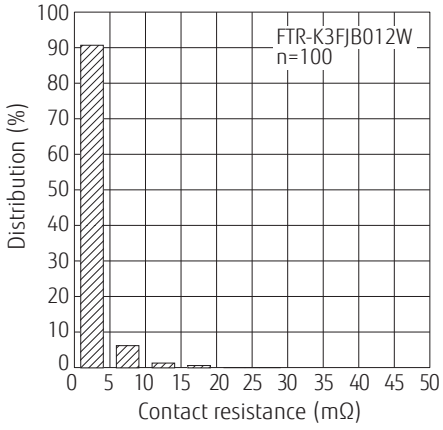
Distribution of operate/release voltage



Distribution of operate/release time



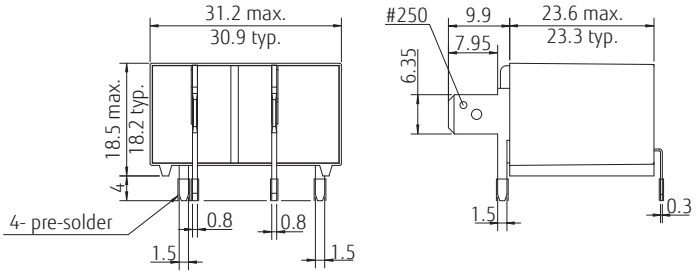
Distribution of contact resistance



■ DIMENSIONS

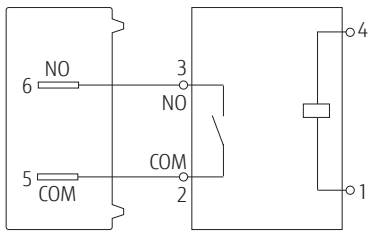
FTR-K3FJB

- **Dimensions**



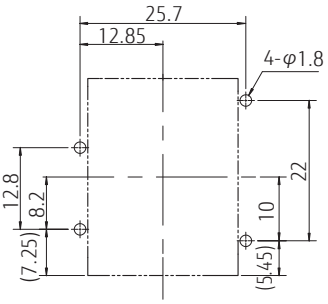
- **Schematics**

(SIDE VIEW) (BOTTOM VIEW)



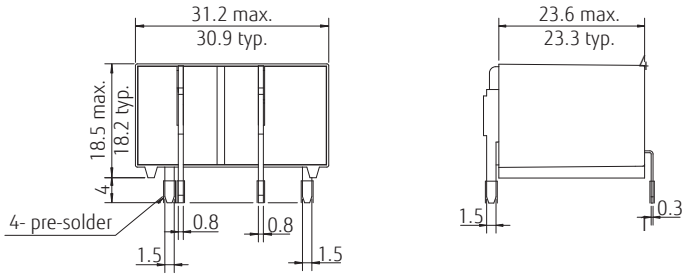
- **PC board mounting hole layout**

(BOTTOM VIEW)



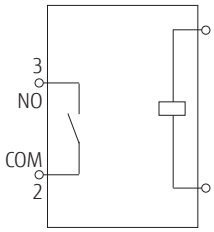
FTR-K3FAB

- **Dimensions**



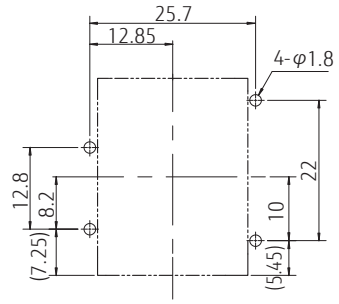
- **Schematics**

(BOTTOM VIEW)



- **PC board mounting hole layout**

(BOTTOM VIEW)



Dimensions of the terminals do not include thickness of pre-solder.
Tolerance of PC board mounting hole layout : ±0.1 unless otherwise specified.

( ): Reference
Unit: mm

Cautions

- All values mentioned in this datasheet are provided under ideal conditions. Please perform the confirmation test before actual use.
- Reflow soldering is prohibited.
- Do not use relays in the atmosphere with sulfide gas, chloride gas or nitric oxide. Contact resistance may increase.
- Do not use silicon or silicon-containing product or materials near relays. It may cause contact failure.

RoHS Compliance and Lead Free Information

1. General Information

- All signal and power relays produced by Fujitsu Components are compliant with RoHS directive 2002/95EC including amendments.
- Cadmium as used in electrical contacts is exempted from the RoHS directives on October 21st, 2005. (Amendment to Directive 2002/95/EC)
- All of our signal and power relays are lead-free. Please refer to Lead-Free Status Info for older date codes at: http://www.fujitsu.com/us/downloads/MICRO/fcai/relays/lead-free-letter.pdf
- Lead free solder plating on relay teminals is Sn-3.0Ag-0.5Cu, unless otherwise specified. This material has been verified to be compatible with PbSn assembly process.

2. Recommended Lead Free Solder Profile

- Recommended solder Sn-3.0Ag-0.5Cu.

Flow Solder condition:
Pre-heating: maximum 120˚C within 90 sec.
Soldering: dip within 5 sec. at 255˚C±5℃ solder bath
Relay must be cooled by air immeriately after soldering.

Solder by Soldering Iron:
Soldering Iron: 30-60W
Temperature: maximum 350-360˚C
Duration: maximum 3 sec.

We highly recommend that you confirm your actual solder conditionsr Profile

3. Moisture Sensitivity

- Moisture Sensitivity Level standard is not applicable to electromechanical relays, unless otherwise indicated.

4. Tin Whiskers

- Dipped SnAgCu solder is known as presenting a low risk to tin whisker development. No considerable length whisker was found by our in house test.

Contact

Japan
FUJITSU COMPONENT LIMITED
Shinagawa Seaside Park Tower
12-4, Higashi-shinagawa 4-chome,
Tokyo 140 0002, Japan
Tel: (81-3) 3450-1682
Email: fcl-contact@cs.fcl-components.com

North and South America
FUJITSU COMPONENTS AMERICA
350 Cobalt Way, M/S 160
Sunnyvale, CA 94085 U.S.A.
Tel: (1-408) 745-4900
Email: components@gr.fcl-components.com

Europe
FUJITSU COMPONENTS EUROPE
Diamantlaan 25
2132 WV Hoofddorp, Netherlands
Tel: (31-23) 5560910
Email: info.fceu@cs.fcl-components.com

Asia Pacific
FUJITSU COMPONENTS ASIA.
No. 20 Harbour Drive, #07-01B
Singapore 117612
Tel: (65) 6375-8560
Email: fcal@fcl-components.com

China
FUJITSU ELECTRONIC COMPONENTS (SHANGHAI)
Unit 4306, InterContinental Center
100 Yu Tong Road, Shanghai 200070, China
Tel: (86 21) 3253 0998
Email: fcsh@fcl-components.com

Hong Kong
FUJITSU COMPONENTS HONG KONG
Room 13, 23/F, Seapower Tower, Concordia Plaza, No.1 Science Museum Road, Tsim Sha Tsui East, Kowloon, Hong Kong
Tel: (852) 2881 8495
Email: fcal@fcl-components.com

Korea
FUJITSU COMPONENTS KOREA
Alpha Tower #403, 645 Sampyeong-dong,
Bundang-gu, Seongnam-si, Gyeonggi-do, 13524 Korea
Tel: (82 31) 708-7108
Email: fcal@fcl-components.com

Web: www.fcl.fujitsu.com/en/

Fujitsu Products are intended for general use, including without limitation, in personal, household and office environments, in buildings and for ordinary use in the industry. Fujitsu Products are not intended to be used in applications where extremely high safety is required (”High Safety Required Applications”), such as, but not limited to, applications in nuclear facilities, in aircraft automatic flight control, in air traffic control, in mass transit system control, in missile launch system, in weapon systems, in medical equipment for life support or any application involving a direct serious risk of physical injury or death.
Please do not use Fujitsu Products without securing the sufficient safety and reliability required for the High Safety Required Applications.
In addition, Fujitsu shall not be liable against the customer and/or any third party for any claims or damages arising in connection with the use of Fujitsu Products in the High Safety Required Applications.
Fujitsu warrants that its Products, if properly used and services, will conform to their specification and will be free from defects in material and workmanship for twelve months from delivery.
The implied warranties of merchantability and fitness for a particular purpose and all other warranties, representations and conditions, express or implied by statute, trade usage or otherwise, expect as set forth in this warranty, are excluded and shall not apply to the Products delivered.

The contents, data and information in this datasheet are provided by Fujitsu Component Ltd. as a service only to its user and only for general information purposes. The use of the contents, data and information provided in this datasheet is at the users’ own risk.
Fujitsu has assembled this datasheet with care and will endeavor to keep the contents, data and information correct, accurate, comprehensive, complete and up to date.
Fujitsu Component Limited and affiliated companies do however not accept any responsibility or liability on their behalf, nor on behalf of its employees, for any loss or damage, direct, indirect or consequential, with respect to this datasheet, its contents, data, and information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof.
Nor do Fujitsu Component Limited and affiliated companies accept on their behalf, nor on behalf of its employees, any responsibility or liability with respect to these datasheets, its contents, data, information and related graphics and the correctness, reliability, accuracy, comprehensiveness, usefulness, availability and completeness thereof. Rev. September 20, 2022.